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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Poynter
Serial No.: 09/847,755
Filed: May 2, 2001
For: METHODS AND APPARATUS FOR DESIGN OF DOT MATRIX VISUAL
DISPLAYS
Group: 2123
Examiner: Stevens, Thomas H.

Durham, North Carolina
September 29, 2005

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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1. Appellant's Corrected Brief (22 pages)

Marianna Tortorelli

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Marianna Tortorelli

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Date: September 29, 2005

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of : Poynter

For:

METHODS AND APPARATUS FOR
DESIGN OF DOT MATRIX VISUAL
DISPLAYS

Serial No. : 09/847,755

Filed : 05/02/2001

Group : 2123

Examiner : Stevens, Thomas H.

Durham, North Carolina
June 30, 2005MAIL STOP APPEAL BRIEF – PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450APPELLANTS' CORRECTED BRIEF

Sir:

This amended brief is in response to a Notification of Non-Compliance with 37 C.F.R. 41.37 mailed on September 26, 2005. On September 29, 2005, Appellants' attorney participated in a call with the Examiner to clarify that the Evidence and Related Proceedings Appendices were required even though there is no evidence or a related proceeding involved in this case.

The Examiner explained that the Appendices were required and that their contents could specify “none.” This amended brief adds the Evidence and Related Proceedings Appendices as requested.

1. The Real Party In Interest

The real party in interest is the assignee, NCR Corporation.

2. Related Appeals and Interferences

None.

3. Status of the Claims

This is an appeal from the March 25, 2005 final rejection of claims 1-12, all of the pending claims. Claims 1-12 were rejected under 35 U.S.C. § 103(a) as obvious over Dowling et al. U.S. Patent No. 5,995,086 (“Dowling”) in view of NEC Corporation, “Character Pattern Editor for On-Screen Display of LSI for Windows,” User’s Manuel, November 2000 (“NEC”). Pending claims 1-12 are the subject of this appeal.

4. Status of Amendments

The claims stand as last amended on January 6, 2005.

5. Summary of Claimed Subject Matter

A dot matrix display design tool according to an aspect of the present invention is preferably implemented in software on a computer. Specification, page 5, lines 2-5 and Fig. 2. The display design tool 122 includes a character set designer 204, allowing a user to construct a character set comprising a set of characters having any one of a number of matrix sizes. Matrix sizes are typically expressed as X by Y, where X is a number of pixel columns and Y is a number of pixel rows. The character set designer 204 allows the user to specify the matrix size

and create a design for each character in the character set, with the user being allowed to specify pixel values for each location in a matrix. Specification, page 6, line 7 – page 9, line 13 and Fig. 4. Additionally, the display design tool 122 also includes a display designer 206 for use once a character set has been created. The display designer 206 allows the user to vary desired characteristics of the visual appearance of a contemplated display, such as matrix dimensions, pixel shape, inter-pixel separation and other characteristics. The display designer 206 displays a value for modifiable display characteristics. These values are therefore readily available for analysis in order to evaluate unit costs or to provide engineering specifications needed in manufacture of a display. Specification, page 9, line 14 – page 11, line 3 and Fig. 5.

The design tool 122 further includes a display viewer 208 which allows a user to simulate an operating hardware display, and to specify and view additional characteristics of the contemplated display, such as display labeling, housing shape and color without having to manufacture a hardware display. The user is also able to specify operating characteristics such as message frequency, scrolling speed and frequency, interword spacing and punctuation spacing. The user is thus able to view a “virtual” hardware device, for example a “virtual” electronic price label, which exists simply as a display on a computer monitor but which allows the user to see how the device would appear when manufactured and to modify the operating characteristics of the device in order to achieve the desired characteristics. Specification, page 11, line 3 – page 12, line 10.

By way of example, claim 1 with added exemplary references to the present specification and reference numbers used in connection with corresponding drawings reads as follows:

1. A dot matrix display design tool (122), comprising:
a font designer (204, 400; Figs. 2, 4; page 6, line 7 – page 9, line 13) for creating a character set comprising a plurality of characters and a character design associated with each of the characters, the character design comprising a pattern

of selected and deselected pixel positions in a matrix of pixel positions, the font designer creating each character design in response to selections made by a user, the font designer further allowing the user to save and delete characters as desired; and

a display designer (206, 500; Figs. 2, 4; page 9, line 14 – page 11, line 3) comprising a text input entry interface (508A-B) for text input by a user and a character set selection interface (502A-B) to allow user selection of a selected character set for displaying the text (504A-B), the display designer further comprising an operating characteristics interface (516, 518, 520, 522, 524, 526, 556, 558, 560, 562, 564, 566; Fig. 5; page 10, line 5 – page 11, line 3) for receiving operating characteristics entries specifying operating characteristics of an operating display to be emulated, the display designer further including a display emulator (600; Fig. 6; page 11, line 4 – page 12, line 10) presenting a representation of the operating display, the representation of the operating display presenting the text input in a format reflecting the selected character set and exhibiting the operating characteristics specified by the operating characteristics entries, the display designer further including a set of editing tools (612-622; Fig. 6) to allow modification of the display in response to selections made by a user, the editing tools supporting modification of the character set and the operating characteristics of the display, modifications made using the editing tools being reflected in the appearance of the text as presented by the display emulator.

Claim 10 addresses a method of display design for a dot matrix display device. Such a method advantageously provides a designer visible feedback of his or her selections when a message is displayed as if it were displayed on a dot matrix display device. To this end, the method includes creating a character set design in response to selection by a user of each of a set of characters from a character list and specification of pixel values for the character in a matrix designer. The matrix designer (406) provides a visual model of an array of available pixel locations for the character. Specification, page 12, lines 11-23 and Fig. 7, steps 702-706. The method further includes displaying a message using the selected character set design, the display of the message presenting text specified by the user and being presented as the message would appear in an operating display using the selected character set design and exhibiting operating characteristics chosen in response to user specifications. Specification, page 13, lines 4 – 11 and Fig. 7, steps 710-716. The method further includes modifying aspects of the design in response

to user selections, the appearance of the display of the message being immediately altered to reflect each user selection. Specification, page 13, lines 11 – 23 and Fig. 7, steps 718-730.

Claim 10 with added exemplary references to the present specification and reference numbers used in connection with corresponding drawings reads as follows:

10. A method of display design for a dot matrix display device comprising the steps of:
- creating a character set design in response to selection by a user of each of a set of characters from a character list and specification of pixel values for the character in a matrix designer providing a visual model of an array of available pixel locations for the character (page 12, lines 11-23 and Fig. 7, steps 702-706);
 - displaying a message using the selected character set design, the display of the message presenting text specified by the user and being presented as the message would appear in an operating display using the selected character set design and exhibiting operating characteristics chosen in response to user specifications (page 13, lines 4 – 11 and Fig. 7, steps 710-716); and
 - modifying aspects of the design in response to user selections, the appearance of the display of the message being immediately altered to reflect each user selection (page 13, lines 11 – 23 and Fig. 7, steps 718-730).

6. Grounds of Rejection to be Reviewed on Appeal

Claims 1-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dowling in view of NEC.

7. Argument

The final rejection under 35 U.S.C. § 103 did not follow M.P.E.P. § 706.02(j) which states:

After indicating that the rejection is under 35 U.S.C. 103, the Examiner should set forth...the difference or differences in the claim over the applied reference,...the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and ... an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.

As will be illustrated below, the claims of the present invention are not obvious in view of the references relied upon by the Examiner.

A. Rejection under 35 U.S.C. § 103(a) over Dowling in view of NEC

This sole rejection is not supported by Dowling and NEC. 35 U.S.C. § 103 which governs obviousness indicates that “differences between the subject matter sought to be patented and the prior art” are to be assessed based upon “the subject matter as a whole”. Analyzing the entirety of each claim, the rejections under 35 U.S.C. § 103 are not supported by the relied upon art as addressed further below. Only after an analysis of the individual references has been made can it then be considered whether it is fair to combine teachings. However, as addressed further below, fairness requires an analysis of failure of others, the lack of recognition of the problem, and must avoid the improper hindsight reconstruction of the present invention. Such an analysis should consider whether the modifications are actually suggested by the references rather than assuming they are obvious. The 35 U.S.C. § 103 rejections made here pick and choose elements from two separate references, neither of which presents any motivation for making the suggested combination. This approach constitutes impermissible hindsight and must be avoided. These references, even when combined, do not teach and do not suggest all the claim limitations. This general application of references fails to meet the burden of establishing a prima facie case for obviousness. As required by 35 U.S.C. § 103, claims must be considered as a whole. When so considered, the present claims are not obvious.

Turning to the references relied upon, both Dowling and NEC are markedly different from the present invention and address problems only peripherally related to the solutions provided by the present invention. Dowling is entitled “Method of Generating Multiple-Master Typefaces.” Dowling describes creating different fonts by varying font variables such as width, weight, size and style which are characteristics shared by each character in the character set. More specifically, Dowling describes a method for making modifications to character specific

attributes when the specified combination of font variables results in an artistically displeasing character at predetermined thresholds. Dowling, col. 3, lines 24-29 and col. 4, lines 51-52. In Dowling's approach, a threshold value of a font variable is determined so that a character specific attribute is modified differently for a character whose font variable exceeds the threshold than the same character whose font variable does not. See, Dowling, col. 4, lines 31-49. Such exception processing on characters whose font variable exceeds a threshold have no apparent relevance with respect to the problem of evaluating the appearance of dot matrix designs as taught and claimed by the present invention.

NEC is a user's manual entitled "Character Pattern Editor for On-Screen Display LSI for Windows." It teaches a character designer and editor, allowing creation of character sets, display of the same, and modification of the character sets as part of the character set design process. In particular, a character set is designed and stored on a programmable read only memory (PROM) device. NEC, page 29 and Fig. 1-1. Although NEC is unclear with regards to a particular use of the PROM programmed according to the user's manual, NEC suggests programming a particular character set into a PROM to view the displaying and printing of the designed character set before ordering a mask ROM for a printer driver card, for example. Refer to NEC Fig. 1-1 where it shows the setup configuration which includes a personal computer running Microsoft Windows 3.1J, a PROM programmer, and a printer. The printer driver card would then utilize the mask ROM manufactured to operate like the PROM programmed with the particular character set. See, NEC, page 67 and Fig. 5-1, where it provides instructions to order a mask ROM based on the programmed PROM. Thus, NEC describes the development of a ROM to store a specifically designed character set to be employed, for example, in a printer driver card or a video display adapter to drive a corresponding printer or monitor. Unlike the present

invention, NEC does not teach emulating a display device such as a “virtual” electronic price label employing an LCD display.

NEC does not teach receiving operating characteristics entries allowing specification of operating characteristics of an operating display to be emulated and display of a text input specified by a user. (emphasis added) Further, NEC does not teach a set of editing tools to allow modification of the display in response to selections made by a user, with the editing tools allowing for modification of the character set and the operating characteristics of the display, with modifications made using the editing tools being reflected in the appearance of the text as presented by a display emulator.

Independent Claim 1

In stark contrast to Dowling and NEC, the claimed invention addresses the problem of evaluating the appearance of a contemplated display device. The present invention, as claimed by claim 1, allows for emulation of an actual display device exhibiting specified operating characteristics and displaying specified text that is part of a specified character set, and modification of characteristics of the contemplated display device, with the results of the modification being immediately visible. Such emulation allows a designer to see the appearance of a design and to investigate the effects of design choices allowing multiple designs to be quickly visualized and compared. By contrast, Dowling is directed simply to the design of a character set and NEC is directed simply to designing a character set to be deployed in a PROM. Unlike the present invention, Dowling and NEC are not directed to the overall design of a display device.

Referring to Fig. 6 of the present specification, for example, an operating characteristics interface includes editing tools for changing the appearance of the contemplated display device

such as a contrast editor 614, a pixel height to width ratio editor 616, an inter-pixel row spacing editor 618, an inter-pixel column spacing editor 620, and an inter-character spacing editor 622, inter-word spacing 624, a scroll frequency 630, and the like. With the operating characteristics interface as claimed, a designer may advantageously evaluate a contemplated display. Claim 1 recites “an operating characteristics interface for receiving operating characteristics entries specifying operating characteristics of an operating display to be emulated, the display designer further including a display emulator presenting a representation of the operating display...the display designer further including a set of editing tools to allow modification of the display in response to selections made by a user, the editing tools supporting modification of the character set and the operating characteristics of the display, modifications made using the editing tools being reflected in the appearance of the text as presented by the display emulator.”

Neither Dowling nor NEC teaches “an operating characteristics interface for receiving operating characteristics entries specifying operating characteristics of an operating display to be emulated, the display designer further including a display emulator presenting a representation of the operating display,” as claimed in claim 1. Dowling merely addresses a threshold value for a font variable which is set by a font designer to determine whether to modify a characteristic of a character whose value exceeds the threshold differently than the same character whose value does not. NEC merely addresses a character pattern editor for creating a character set and programming a PROM to contain the character set.

Specifically, the last substantive Official Action mailed March 25, 2003 (“Official Action”) relies on col. 1, line 65 – col. 2, line 2 of Dowling as purportedly suggesting the above feature. Applicant respectfully disagrees. The cited text refers to font generation based on a set of font variables to describe an entire character set and, like the rest of Dowling and NEC, has

nothing to do with evaluating a contemplated display.

Dowling and NEC, taken separately or in combination, do not teach and do not suggest “editing tools supporting modification of the character set and the operating characteristics of the display, modifications made using the editing tools being reflected in the appearance of the text as presented by the display emulator,” as claimed in claim 1. Dowling’s disclosure is silent with respect to any editing tools. NEC’s editing tools merely address developing a character pattern by editing characters on a pixel basis without regard to the operating characteristics of an emulated display.

Independent Claim 10

Claim 10 recites “displaying a message using the selected character set design, the display of the message presenting text specified by the user and being presented as the message would appear in an operating display using the selected character set design and exhibiting operating characteristics chosen in response to user specifications.” (emphasis added) Dowling and NEC merely address the creation of a character set without display of a message composed of the character set. Clearly, the relied upon art does not teach and does not render obvious such a technique. Thus, independent claims 1 and 10 are allowable over the relied upon art.

Dependent Claims 3 and 11

Claim 3 addresses a further refinement of the display emulator of claim 1 to include “a first display emulator” and “a second display emulator” which together allow “the user to simultaneously view first and second text entries and to view results of independent selections and modifications relating to the first and second text entries.” Similarly claim 11 addresses “displaying a first message simultaneously with a second message and independently modifying characteristics of each displayed message to allow comparison between the two displayed

messages.” These claimed features advantageously provide visual feedback allowing a designer to see how various adjustments affect the emulated display. The Official Action relied on pages 19 and 27 of NEC as purportedly disclosing this feature. Applicant respectfully disagrees. The cited portion of text shows multiple edit windows for editing a particular character and the ability to select the best suited window for editing purposes of the user. The relied upon references do not teach and do not suggest the first and second display emulators as claimed.

Dependent Claim 6

Claim 6 addresses specific characteristics that the editing tools specify such as “contrast, pixel height and width, spacing between rows of pixels making up a character and spacing between columns of pixels making up a character.” Dowling and NEC, taken separately or in combination, do not teach and do not suggest editing tools which modify the combination of characteristics as claimed. Dowling merely describes modifying font width and weight. Dowling, col. 3, lines 50-67. NEC merely describes turning one or more pixels of a character on or off or changing the color of one or more pixels through various geometric editing functions such as pencil tool, line tool, rectangle tool, and the like. NEC, pages 34-35. It is clear the Dowling and NEC do not recognize the need to adjust “spacing between rows of pixels making up a character and spacing between columns of pixels making up a character,” as claimed. Furthermore, Dowling and NEC do not teach and do not suggest an editing tool to accomplish the claimed ends.

Dependent Claims 7-9

Claim 7 addresses the display viewer storing “a set of messages and cycling between the messages at a rate selected by the user,” claim 8 addresses “scrolling of a displayed message at a rate selected by the user,” and claim 9 addresses editing tools to allow modification of message

characteristics such as “interword spacing” and “intercharacter spacing.” Both NEC and Dowling address character set creation but do not address the appearance of these characters in a message displayed in an emulated display. Thus, NEC and Dowling do not have a need to display messages. Consequently, NEC and Dowling do not teach and do not suggest the particular display related features claimed in claims 7-9.

Dependent Claim 12

Claim 12 further includes the step of “displaying a representation of a hardware display unit using the character set design and modifying selected features of the representation in response to user selections.” The modification to selected features include “features of the character set design and the operating characteristics of the hardware display unit being represented.” (emphasis added) As discussed above, Dowling and NEC, taken separately or in combination, do not address an emulated display such as the “representation of a hardware display unit” as claimed in claim 12. Consequently, Dowling and NEC do not teach and do not suggest the features as claimed in claim 12.

In conclusion, the Official Action incorrectly interprets Dowling and NEC as purportedly suggesting claim features such as “a representation of a hardware display unit,” for example, that are simply non-existent in the relied upon art.

Overall, the Applicant is somewhat puzzled by the Examiner’s response to the previously submitted arguments and the apparent refusal of the Examiner to consider both the plain language and the context of the present claims. The relied upon references do not teach and do not render obvious a display emulator, for example, which performs the presently claimed functions.

To sum up, Dowling and NEC do not show and do not suggest an apparatus and method for design of dot matrix visual displays as presently claimed. Nothing in the cited references indicates a recognition of the problems addressed by the present invention. Further, nothing in the cited references indicates an apparatus which would solve the problems addressed by the present invention. The claims of the present invention are not taught, are not inherent, and are not obvious in light of the art relied upon.

C The Examiner's Findings of Obviousness are
 Also Contrary to Law of the Federal Circuit

. As shown above, the claimed invention is not suggested by the relied upon prior art. It is only in hindsight, after seeing the claimed invention, that the Examiner could combine the references as the Examiner has done. This approach is improper under the law of the Federal Circuit, which has stated that “[w]hen prior art references require selective combination by the Court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.” Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 U.S.P.Q. 2d 1434, 1438 (Fed. Cir. 1988), cert. den., 109 S. Ct. 75, 102 L.Ed. 2d 51 (1988); quoting Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1132, 227 U.S.P.Q. 543, 535 (Fed. Cir. 1985). Furthermore, “[i]t is impermissible to use the claims as a frame and the prior art references as a mosaic to piece together a facsimile of the claimed invention.” Uniroyal, 837 F.2d at 1051, 5 U.S.P.Q. 2d at 1438. Similarly, “[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.” In re Laskowski, 871 F.2d 115, 117, 10 U.S.P.Q. 2d 1397, 1398 (Fed. Cir. 1989), quoting In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). No such suggestion is found here.

In addition, the Examiner does not appear to have considered “where the references diverge and teach away from the claimed invention”, Akzo N.V. v. International Trade Commission, 808 F.2d 1471, 1481, 1 U.S.P.Q. 2d 1241, 1246 (Fed. Cir. 1986), cert. den., 107 S. Ct. 2490, 482 U.S. 909, 107 S.Ct. 2490 (1987); and W.L. Gore Associates, Inc., 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983); nor has the Examiner read the claims as a whole, as required by statute. 35 U.S.C. §103. See also, Smithkline Diagnostics Inc. v. Helena Laboratories Corp., 859 F.2d 878, 885, 8 U.S.P.Q. 2d 1468, 1475 (Fed. Cir. 1988); and Interconnect Planning Corp., 774 F.2d at 1143, 227 U.S.P.Q. at 551.

In In re Laskowski, 871 F.2d 115, 10 U.S.P.Q. 2d 1397, the Federal Circuit reversed an obviousness rejection of the claims in an application for a bandsaw. The claimed bandsaw used a pulley type wheel loosely fitted with a tire. The primary reference showed a similar bandsaw where the band was tightly fitted. The Federal Circuit stated that the prior art did not provide a suggestion, reason or motivation to make the modification of the reference proposed by the Commissioner. Id. at 1398. The Court added that “there must be some logical reason apparent from the positive, concrete evidence of record which justifies a combination of primary and secondary references.” Id. quoting In re Regel, 526 F.2d 1399, 1403, 188 U.S.P.Q. 136, 139 (C.C.P.A. 1975), citing In re Stemniski, 444 F.2d 581, 170 U.S.P.Q. 343 (C.C.P.A. 1971).

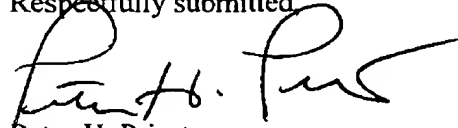
In Uniroyal Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 U.S.P.Q. 2d 1434 (Fed. Cir. 1988), cert. den., 109 S. Ct. 75, 102 L.Ed. 2d 51 (1988), the Federal Circuit reversed the District Court’s finding that the claims for a patent for an air flow deflecting shield were obvious. Without any suggestion in the art, the District Court improperly chose features from several prior art references to recreate the claimed invention.

The Examiner's rejection suggests that the Examiner did not consider and appreciate the claims as a whole. The claims disclose a unique combination with many features and advantages not shown in the art. It appears that the Examiner has oversimplified the claims and then searched the prior art for the constituent parts. Even with the claims as a guide, however, the Examiner did not recreate the claimed invention.

9. Conclusion

The rejection of claims 1-12 should be reversed and the application promptly allowed.

Respectfully submitted

A handwritten signature in black ink, appearing to read "Peter H. Priest", written over the typed name.

Peter H. Priest

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CLAIMS APPENDIX
(Claims Under Appeal)

1. A dot matrix display design tool, comprising:

a font designer for creating a character set comprising a plurality of characters and a character design associated with each of the characters, the character design comprising a pattern of selected and deselected pixel positions in a matrix of pixel positions, the font designer creating each character design in response to selections made by a user, the font designer further allowing the user to save and delete characters as desired; and

a display designer comprising a text input entry interface for text input by a user and a character set selection interface to allow user selection of a selected character set for displaying the text, the display designer further comprising an operating characteristics interface for receiving operating characteristics entries specifying operating characteristics of an operating display to be emulated, the display designer further including a display emulator presenting a representation of the operating display, the representation of the operating display presenting the text input in a format reflecting the selected character set and exhibiting the operating characteristics specified by the operating characteristics entries, the display designer further including a set of editing tools to allow modification of the display in response to selections made by a user, the editing tools supporting modification of the character set and the operating characteristics of the display, modifications made using the editing tools being reflected in the appearance of the text as presented by the display emulator.

2. The design tool of claim 1 further comprising a display viewer for emulating a dot matrix display, the display viewer being operative to receive input text and a character set selection, the display viewer being further operative to display the input text in a format

reflecting the character set selection, the display viewer being further operative to simulate additional characteristics of a dot matrix display in displaying the input text, the display viewer being further operative to modify the additional characteristics in response to user selections.

3. The design tool of claim 2 wherein the display emulator is a first display emulator and the display designer further comprises a second display emulator, the first and second display emulators allowing the user to simultaneously view first and second text entries and to view results of independent selections and modifications relating to the first and second text entries.

4. The design tool of claim 3 wherein the font designer comprises a dot matrix designer comprising an array of pixel positions to be selected or deselected by the user, the font designer allowing user selection of each of a plurality of characters and allowing the user to select use the dot matrix designer to select or deselect pixel positions to create an array of pixels to be associated with the selected character.

5. The design tool of claim 4 wherein the font designer allows user specification of a character size to be associated with a character set and wherein the font designer sets dimensions of the array of pixel positions according to the character size specified by the user.

6. The design tool of claim 5 wherein the editing tools allow specification of contrast, pixel height and width, spacing between rows of pixels making up a character and spacing between columns of pixels making up a character.

7. The design tool of claim 6 wherein the display viewer allows storage of a set of messages and cycling between the messages at a rate selected by the user.

8. The design tool of claim 7 wherein the display viewer allows scrolling of a displayed message at a rate selected by the user.

9. The design tool of claim 8 wherein the display viewer includes a set of editing tools to allow modification of display characteristics, the editing tools allowing specification of interword spacing, intercharacter spacing and spacing surrounding punctuation characters.

10. A method of display design for a dot matrix display device comprising the steps of:

creating a character set design in response to selection by a user of each of a set of characters from a character list and specification of pixel values for the character in a matrix designer providing a visual model of an array of available pixel locations for the character;

displaying a message using the selected character set design, the display of the message presenting text specified by the user and being presented as the message would appear in an operating display using the selected character set design and exhibiting operating characteristics chosen in response to user specifications; and

modifying aspects of the design in response to user selections, the appearance of the display of the message being immediately altered to reflect each user selection.

11. The method of claim 10 wherein the step of displaying a message includes displaying a first message simultaneously with a second message and independently modifying characteristics of each displayed message to allow comparison between the two displayed messages.

12. The method of claim 11 and further including displaying a representation of a hardware display unit using the character set design and modifying selected features of the representation in response to user selections, the modifications including modifications to features of the character set design and the operating characteristics of the hardware display unit being represented, each modification being immediately displayed upon entry of a corresponding

user selection.

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EVIDENCE APPENDIX

None.

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RELATED PROCEEDINGS APPENDIX

None.

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